

Hydric Soils

Anoka County, Minnesota

[This report lists only those map unit components that are rated as hydric. Dashes (---) in any column indicate that the data were not included in the database. Definitions of hydric criteria codes are included at the end of the report]

Map symbol and map unit name	Component	Percent of map unit	Landform	Hydric rating	Hydric criteria
Af:					
Alluvial land, mixed, frequently flooded	Alluvial land, frequently flooded	100	Alluvial flats, Flood plains	Yes	2B3, 4
AnA:					
Anoka loamy fine sand, 0 to 2 percent slopes	Anoka	90	Outwash plains	No	---
	Soderville	5	---	No	---
	Zimmerman	5	---	No	---
AnB:					
Anoka loamy fine sand, 2 to 6 percent slopes	Anoka	90	Outwash plains	No	---
	Zimmerman	10	---	No	---
AnC:					
Anoka loamy fine sand, 6 to 12 percent slopes	Anoka	90	Outwash plains	No	---
	Zimmerman	10	---	No	---
Ba:					
Becker very fine sandy loam	Becker	85	Flood plains	No	---
	Poorly Drained Soils	7	Depressions	Yes	2B3
	Dickman	4	---	No	---
	Hubbard	4	---	No	---
Bm:					
Blomford loamy fine sand	Blomford	85	Moraines, Swales	Yes	2B2
	Dundas	5	Drainageways, Flats	Yes	2B3
	Lino	5	---	No	---
	Nowen	5	Drainageways	Yes	2B3

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Map symbol and map unit name	Component	Percent of map unit	Landform	Hydric rating	Hydric criteria
BtB:					
Braham loamy fine sand, 2 to 6 percent slopes	Braham	85	Moraines	No	---
	Blomford	4	Depressions, Swales	Yes	2B2
	Hayden	4	---	No	---
	Kratka	4	Depressions, Drainageways	Yes	2B2, 3
	Zimmerman	3	---	No	---
BtC:					
Braham loamy fine sand, 6 to 18 percent slopes	Braham	85	Moraines	No	---
	Blomford	4	Depressions, Swales	Yes	2B2
	Hayden	4	---	No	---
	Kratka	4	Depressions, Drainageways	Yes	2B2, 3
	Zimmerman	3	---	No	---
Bx:					
Brickton silt loam	Brickton	85	Flats, Lake plains	Yes	2B3
	Very Poorly Drained Soils	8	Flats, Lake plains	Yes	2B3
	Dalbo	7	---	No	---
Cb:					
Cathro muck	Cathro	85	Depressions, Moraines	Yes	1, 3
	Seelyeville	8	Depressions	Yes	1, 3
	Rifle	7	Depressions	Yes	1, 3
CkB:					
Chetek sandy loam, 2 to 6 percent slopes	Chetek	85	Moraines	No	---
	Alkaline Substratum Soils	5	---	No	---
	Emmert	5	---	No	---
	Kingsley	5	---	No	---

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CkC:					
Chetek sandy loam, 6 to 12 percent slopes	Chetek	85	Moraines	No	---
	Alkaline Substratum Soils	4	---	No	---
	Emmert	4	---	No	---
	Kingsley	4	---	No	---
	Eroded Surface Soils	3	---	No	---
Cu:					
Cut and fill land	Cut and fill land	100	Moraines	No	---
DIA:					
Dalbo silt loam, 1 to 5 percent slopes	Dalbo	85	Lake plains	No	---
	Sandy Substratum Soils	15	---	No	---
DnA:					
Dickman sandy loam, 0 to 2 percent slopes	Dickman	90	Stream terraces	No	---
	Hubbard	10	---	No	---
DnB:					
Dickman sandy loam, 2 to 6 percent slopes	Dickman	90	Stream terraces	No	---
	Hubbard	10	---	No	---
Dp:					
Duelm loamy coarse sand	Duelm	90	Stream terraces	No	---
	Isan	10	Depressions, Drainageways	Yes	2B3, 3
Du:					
Dundas loam	Dundas	85	Flats, Moraines	Yes	2B3
	Kratka	5	Drainageways	Yes	2B2, 3
	Nessel	5	---	No	---
	Webster	5	Drainageways	Yes	2B3

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EmC:					
Emmert gravelly coarse sandy loam, 6 to 12 percent slopes	Emmert	90	Moraines	No	---
	Chetek	10	---	No	---
EmD:					
Emmert gravelly coarse sandy loam, 12 to 25 percent slopes	Emmert	90	Moraines	No	---
	Chetek	5	---	No	---
	Kingsley	5	---	No	---
EpC:					
Emmert complex, 4 to 12 percent slopes	Emmert	70	Moraines	No	---
	Kingsley	30	Moraines	No	---
EpD:					
Emmert complex, 12 to 25 percent slopes	Emmert	70	Moraines	No	---
	Kingsley	30	Moraines	No	---
Fo:					
Fordum-Winterfield complex, 0 to 2 percent slopes, frequently flooded	Fordum, frequently flooded	65	Alluvial flats, Flood plains	Yes	2B3, 4
	Winterfield, frequently flooded	25	Flood plains	No	---
	Fordum, Occasionally flooded	10	Alluvial flats	Yes	2B3
Gc:					
Glencoe loam	Glencoe	85	Depressions, Moraines	Yes	2B3, 3
	Kratka	5	Swales	Yes	2B3, 3
	Soils With Course Sand Strata	5	---	No	---
	Webster	5	Swales	Yes	2B3
GP:					
Pits, gravel-Udipsamments complex	Pits, gravel	100	Outwash plains		---

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Map symbol and map unit name	Component	Percent of map unit	Landform	Hydric rating	Hydric criteria
GrA:					
Growton fine sandy loam, 1 to 4 percent slopes	Growton	85	Moraines	No	---
	Well Drained Soil	8	---	No	---
	Poorly Drained Soil	7	Drainageways	Yes	2B3
HdB:					
Hayden fine sandy loam, 2 to 6 percent slopes	Hayden	85	Moraines	No	---
	Braham	5	---	No	---
	Dundas	5	Drainageways	Yes	2B3
	Nessel	5	---	No	---
HdC2:					
Hayden fine sandy loam, 6 to 12 percent slopes, eroded	Hayden, eroded	85	Moraines	No	---
	Hayden, slightly eroded	15	---	No	---
HdD:					
Hayden fine sandy loam, 12 to 24 percent slopes	Hayden	85	Moraines	No	---
	Hayden, severely eroded	15	---	No	---
HeB:					
Heyder fine sandy loam, 2 to 6 percent slopes	Heyder	85	Moraines	No	---
	Growton	8	---	No	---
	Nowen	7	Drainageways	Yes	2B3
HeC2:					
Heyder fine sandy loam, 6 to 12 percent slopes, eroded	Heyder, eroded	85	Moraines	No	---
	Kingsley	8	---	No	---
	Eroded Surface	7	---	No	---
HeD:					
Heyder fine sandy loam, 12 to 18 percent slopes	Heyder	85	Moraines	No	---
	Kingsley	8	---	No	---
	Eroded Surface	7	---	No	---

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Map symbol and map unit name	Component	Percent of map unit	Landform	Hydric rating	Hydric criteria
HeE:					
Heyder fine sandy loam, 18 to 30 percent slopes	Heyder	85	Moraines	No	---
	Eroded Surface	15	---	No	---
HIC:					
Heyder complex, 4 to 12 percent slopes	Heyder	70	Moraines	No	---
	Emmert	15	Moraines	No	---
	Hayden	15	Moraines	No	---
HID:					
Heyder complex, 12 to 25 percent slopes	Heyder	70	Moraines	No	---
	Emmert	15	Moraines	No	---
	Hayden	15	Moraines	No	---
HuA:					
Hubbard coarse sand, 0 to 2 percent slopes	Hubbard	90	Stream terraces	No	---
	Duelm	10	---	No	---
HuB:					
Hubbard coarse sand, 2 to 6 percent slopes	Hubbard	90	Stream terraces	No	---
	Isan	10	Depressions, Outwash plains	Yes	2B3, 3
HuC:					
Hubbard coarse sand, 6 to 12 percent slopes	Hubbard	95	Stream terraces	No	---
	Duelm	3	---	No	---
	Isan	2	Depressions, Outwash plains	Yes	2B3, 3
Is:					
Isan sandy loam	Isan	85	Stream terraces, Swales	Yes	2B3, 3
	Markey	8	Depressions	Yes	1, 3
	Duelm	7	---	No	---

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Map symbol and map unit name	Component	Percent of map unit	Landform	Hydric rating	Hydric criteria
Iw:					
Isanti fine sandy loam	Isanti	85	Outwash plains, Swales	Yes	2B3, 3
	Markey	8	Depressions	Yes	1, 3
	Lino	7	---	No	---
KmB:					
Kingsley fine sandy loam, 2 to 6 percent slopes	Kingsley	85	Moraines	No	---
	Mora	8	---	No	---
	Ronneby	7	---	No	---
KmC2:					
Kingsley fine sandy loam, 6 to 12 percent slopes, eroded	Kingsley, eroded	85	Moraines	No	---
	Chetek	8	---	No	---
	Eroded Surface	7	---	No	---
KmD:					
Kingsley fine sandy loam, 12 to 18 percent slopes	Kingsley	85	Moraines	No	---
	Chetek	8	---	No	---
	Heyder	7	---	No	---
KmE:					
Kingsley fine sandy loam, 18 to 30 percent slopes	Kingsley	85	Moraines	No	---
	Heyder	8	---	No	---
	Emmert	7	---	No	---
Kr:					
Kratka loamy fine sand	Kratka	85	Moraines, Swales	Yes	2B2, 3
	Blomford	5	Depressions	Yes	2B2
	Isanti	5	Depressions	Yes	2B3, 3
	Webster	5	Depressions	Yes	2B3

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Map symbol and map unit name	Component	Percent of map unit	Landform	Hydric rating	Hydric criteria
Lb:					
Lake beaches	Beaches, lake	100	Shorelines	No	---
LgB:					
Langola loamy sand, 0 to 6 percent slopes	Langola	85	Stream terraces	No	---
	Hubbard	8	---	No	---
	Duelm	7	---	No	---
LnA:					
Lino loamy fine sand, 0 to 4 percent slopes	Lino	85	Outwash plains	No	---
	Isanti	5	Depressions	Yes	2B3, 3
	Sartell	5	---	No	---
	Zimmerman	5	---	No	---
Lw:					
Loamy wet land	Loamy wet land	100	Moraines, Swales	Yes	2B3
Lx:					
Lupton muck	Lupton	85	Depressions, Outwash plains	Yes	1, 3
	Rifle	8	Depressions	Yes	1, 3
	Seelyeville	7	Depressions	Yes	1, 3
M-W:					
Water, miscellaneous	Water, miscellaneous	100	---		---
Ma:					
Markey muck	Markey	85	Depressions, Outwash plains	Yes	1, 3
	Isanti	5	Depressions	Yes	2B3, 3
	Rifle	5	Depressions	Yes	1, 3
	Seelyeville	5	Depressions	Yes	1, 3
Mc:					
Marsh	Marsh	100	Depressions	Yes	1, 3

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Me:					
Meehan sand	Meehan	85	Stream terraces	No	---
	Isan	8	Depressions	Yes	2B3, 3
	Meehan, moderately well drained	7	---	No	---
Mk:					
Millerville mucky peat	Millerville	85	Depressions, Outwash plains	Yes	1, 3
	Rifle	8	Depressions	Yes	1, 3
	Markey	7	Depressions	Yes	1, 3
MoA:					
Mora fine sandy loam, 1 to 4 percent slopes	Mora	85	Moraines	No	---
	Kingsley	8	---	No	---
	Ronneby	7	---	No	---
NeA:					
Nessel fine sandy loam, 1 to 4 percent slopes	Nessel	85	Moraines	No	---
	Braham	4	---	No	---
	Dundas	4	Drainageways	Yes	2B3
	Hayden	4	---	No	---
	Blomford	3	Drainageways	Yes	2B2
No:					
Nowen sandy loam	Nowen	85	Moraines, Swales	Yes	2B3
	Growton	8	---	No	---
	Poorly Drained Soil	7	Drainageways	Yes	2B3
NrD:					
Nymore loamy coarse sand, 12 to 25 percent slopes	Nymore	95	Stream terraces	No	---
	Hubbard	5	---	No	---

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Map symbol and map unit name	Component	Percent of map unit	Landform	Hydric rating	Hydric criteria
NyA:					
Nymore loamy sand, 0 to 2 percent slopes	Nymore	95	Stream terraces	No	---
	Moderately Well Drained Soil	5	---	No	---
NyB:					
Nymore loamy sand, 2 to 6 percent slopes	Nymore	95	Stream terraces	No	---
	Poorly Drained Soil	5	Depressions	Yes	2B3
NyC:					
Nymore loamy sand, 6 to 12 percent slopes	Nymore	95	Stream terraces	No	---
	Hubbard	5	---	No	---
Rf:					
Rifle mucky peat	Rifle	85	Depressions, Outwash plains	Yes	1, 3
	Cathro	4	Depressions	Yes	1, 3
	Markey	4	Depressions	Yes	1, 3
	Seelyeville	4	Depressions	Yes	1, 3
	Millerville	3	Depressions	Yes	1, 3
Rg:					
Rifle muck, woody	Rifle, woody	85	Depressions, Outwash plains	Yes	1, 3
	Rifle, mucky peat	8	Depressions	Yes	1, 3
	Markey	7	Depressions	Yes	1, 3
Rh:					
Rifle soils, ponded	Rifle, ponded	85	Depressions, Outwash plains	Yes	1, 3
	Cathro	4	Depressions	Yes	1, 3
	Markey	4	Depressions	Yes	1, 3
	Seelyeville	4	Depressions	Yes	1, 3
	Millerville	3	Depressions	Yes	1, 3

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Map symbol and map unit name	Component	Percent of map unit	Landform	Hydric rating	Hydric criteria
Ru:					
Rondeau muck	Rondeau	85	Depressions, Outwash plains	Yes	1, 3
	Cathro	5	Depressions	Yes	1, 3
	Markey	5	Depressions	Yes	1, 3
	Seelyeville	5	Depressions	Yes	1, 3
Ry:					
Ronneby fine sandy loam	Ronneby	85	Moraines	No	---
	Mora	12	---	No	---
	Very Poorly Drained Soil	2	Depressions	Yes	2B3, 3
	Excessively Rocky Areas	1	---	No	---
SbB:					
Sartell fine sand, 2 to 6 percent slopes	Sartell	99	Outwash plains	No	---
	Poorly Drained Soil	1	Depressions	Yes	2B3
SbC:					
Sartell fine sand, 6 to 12 percent slopes	Sartell	90	Outwash plains	No	---
	Isanti	4	Depressions	Yes	2B3, 3
	Cantlin	3	---	No	---
	Lino	3	---	No	---
SbC2:					
Sartell fine sand, 6 to 12 percent slopes, eroded	Sartell, eroded	90	Outwash plains	No	---
	Isanti	4	Depressions	Yes	2B3, 3
	Cantlin	3	---	No	---
	Lino	3	---	No	---

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Map symbol and map unit name	Component	Percent of map unit	Landform	Hydric rating	Hydric criteria
SbD2:					
Sartell fine sand, 12 to 24 percent slopes, eroded	Sartell, eroded	90	Outwash plains	No	---
	Isanti	4	Depressions	Yes	2B3, 3
	Cantlin	3	---	No	---
	Lino	3	---	No	---
Se:					
Seelyeville muck	Seelyeville	85	Depressions, Outwash plains	Yes	1, 3
	Cathro	5	Depressions	Yes	1, 3
	Markey	5	Depressions	Yes	1, 3
	Rifle	5	Depressions	Yes	1, 3
SoA:					
Soderville fine sand, 0 to 3 percent slopes	Soderville	85	Outwash plains	No	---
	Lino	7	---	No	---
	Well Drained Soils	7	---	No	---
	Isanti	1	Depressions	Yes	2B3, 3
Ub:					
Urban land-Becker complex, 0 to 3 percent slopes	Urban land	85	Stream terraces		---
	Becker	15	Stream terraces	No	---
Ud:					
Urban land-Dundas complex, 0 to 3 percent slopes	Urban land	85	Moraines		---
	Dundas	15	Flats, Moraines	Yes	2B3
UhdC:					
Urban land-Hayden complex, 3 to 15 percent slopes	Urban land	85	Moraines		---
	Hayden	15	Moraines	No	---

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Map symbol and map unit name	Component	Percent of map unit	Landform	Hydric rating	Hydric criteria
UhdD:					
Urban land-Hayden complex, 15 to 25 percent slopes	Urban land	85	Moraines		---
	Hayden	15	Moraines	No	---
UhuB:					
Urban land-Hubbard complex, 0 to 8 percent slopes	Urban land	75	Stream terraces		---
	Hubbard	20	Stream terraces	No	---
	Mosford	5	Stream terraces	No	---
Ui:					
Urban land-Isanti complex, 0 to 2 percent slopes	Urban land	85	Outwash plains		---
	Isanti	15	Outwash plains, Swales	Yes	2B3, 3
UkD:					
Urban land-Kingsley complex, 15 to 25 percent slopes	Urban land	85	Moraines		---
	Kingsley	15	Moraines	No	---
Un:					
Urban land-Lino complex, 0 to 3 percent slopes	Urban land	85	Outwash plains		---
	Lino	15	Outwash plains	No	---
UuB:					
Urban land-Udorthents (cut and fill land) complex, 0 to 6 percent slopes	Urban land	75	Moraines		---
	Udorthents, cut and fill land	25	Moraines		---
Uw:					
Urban land-Udorthent, wet substratum complex, 0 to 2 percent slopes	Urban land	80	Outwash plains		---
	Udorthents, wet substratum	20	Outwash plains		---
UzB:					
Urban land-Zimmerman complex, 0 to 8 percent slopes	Urban land	85	Outwash plains		---
	Zimmerman	15	Outwash plains	No	---
W:					
Water	Water	100	---		---

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Map symbol and map unit name	Component	Percent of map unit	Landform	Hydric rating	Hydric criteria
Wb:					
Webster loam	Webster	85	Moraines, Swales	Yes	2B3
	Dundas	8	Depressions	Yes	2B3
	Kratka	7	Depressions	Yes	2B3, 3
ZmA:					
Zimmerman fine sand, 0 to 2 percent slopes	Zimmerman	90	Outwash plains	No	---
	Lino	5	---	No	---
	Soderville	5	---	No	---
ZmB:					
Zimmerman fine sand, 2 to 6 percent slopes	Zimmerman	90	Outwash plains	No	---
	Sartell	9	---	No	---
	Isanti	1	Depressions	Yes	2B3, 3
ZmC:					
Zimmerman fine sand, 6 to 12 percent slopes	Zimmerman	95	Outwash plains	No	---
	Cantlin	2	---	No	---
	Isanti	2	Depressions	Yes	2B3, 3
	Lino	1	---	No	---
ZmD:					
Zimmerman fine sand, 12 to 24 percent slopes	Zimmerman	95	Outwash plains	No	---
	Lino	3	---	No	---
	Isanti	2	Depressions	Yes	2B3, 3

Hydric Soils

This table lists the map unit components that are rated as hydric soils in the survey area. This list can help in planning land uses; however, onsite investigation is recommended to determine the hydric soils on a specific site (National Research Council, 1995; Hurt and others, 2002).

The three essential characteristics of wetlands are hydrophytic vegetation, hydric soils, and wetland hydrology (Cowardin and others, 1979; U.S. Army Corps of Engineers, 1987; National Research Council, 1995; Tiner, 1985). Criteria for all of the characteristics must be met for areas to be identified as wetlands. Undrained hydric soils that have natural vegetation should support a dominant population of ecological wetland plant species. Hydric soils that have been converted to other uses should be capable of being restored to wetlands.

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (Federal Register, 1994). These soils, under natural conditions, are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

The NTCHS definition identifies general soil properties that are associated with wetness. In order to determine whether a specific soil is a hydric soil or nonhydric soil, however, more specific information, such as information about the depth and duration of the water table, is needed. Thus, criteria that identify those estimated soil properties unique to hydric soils have been established (Federal Register, 2002). These criteria are used to identify map unit components that normally are associated with wetlands. The criteria used are selected estimated soil properties that are described in "Soil Taxonomy" (Soil Survey Staff, 1999) and "Keys to Soil Taxonomy" (Soil Survey Staff, 2003) and in the "Soil Survey Manual" (Soil Survey Division Staff, 1993).

If soils are wet enough for a long enough period of time to be considered hydric, they should exhibit certain properties that can be easily observed in the field. These visible properties are indicators of hydric soils. The indicators used to make onsite determinations of hydric soils are specified in "Field Indicators of Hydric Soils in the United States" (Hurt and others, 2002).

Hydric soils are identified by examining and describing the soil to a depth of about 20 inches. This depth may be greater if determination of an appropriate indicator so requires. It is always recommended that soils be excavated and described to the depth necessary for an understanding of the redoximorphic processes. Then, using the completed soil descriptions, soil scientists can compare the soil features required by each indicator and specify which indicators have been matched with the conditions observed in the soil. The soil can be identified as a hydric soil if at least one of the approved indicators is present.

Map units that are dominantly made up of hydric soils may have small areas, or inclusions, of nonhydric soils in the higher positions on the landform, and map units dominantly made up of nonhydric soils may have inclusions of hydric soils in the lower positions on the landform.

The criteria for hydric soils are represented by codes in the table (for example, 2B3). Definitions for the codes are as follows:

1. All Histels except for Folistels, and Histosols except for Folists.
2. Soils in Aquic suborders, great groups, or subgroups, Albolls suborder, Historthels great group, Histoturbels great group, Pachic subgroups, or Cumulic subgroups that:
 - A. are somewhat poorly drained and have a water table at the surface (0.0 feet) during the growing season, or
 - B. are poorly drained or very poorly drained and have either:
 - 1) a water table at the surface (0.0 feet) during the growing season if textures are coarse sand, sand, or fine sand in all layers within a depth of 20 inches, or
 - 2) a water table at a depth of 0.5 foot or less during the growing season if permeability is equal to or greater than 6.0 in/hr in all layers within a depth of 20 inches, or
 - 3) a water table at a depth of 1.0 foot or less during the growing season if permeability is less than 6.0 in/hr in any layer within a depth of 20 inches.
3. Soils that are frequently ponded for long or very long duration during the growing season.
4. Soils that are frequently flooded for long or very long duration during the growing season.

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